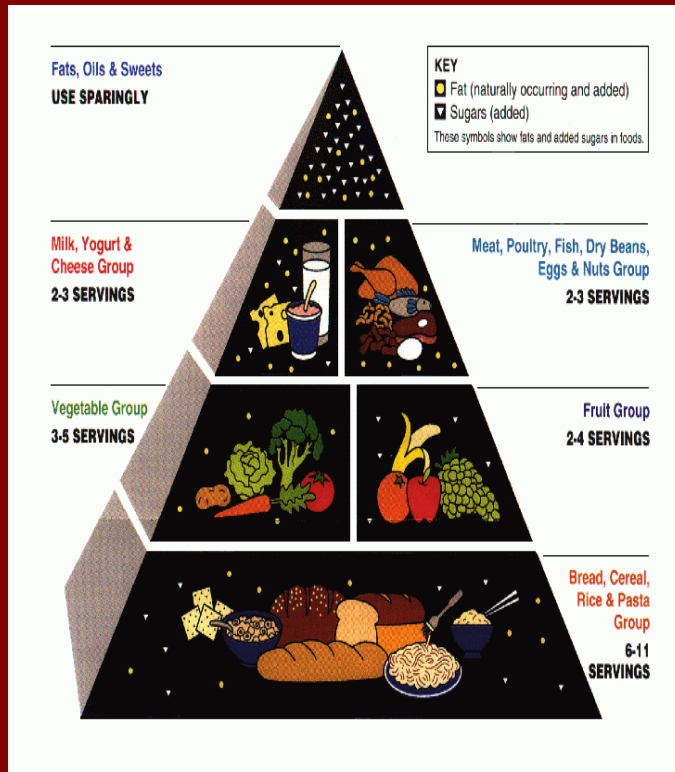


# ***“Zone”ing in on Healthy Eating***



*COL Gaston P. Bathalon, Ph.D., RD  
USARIEM Deputy Commander*

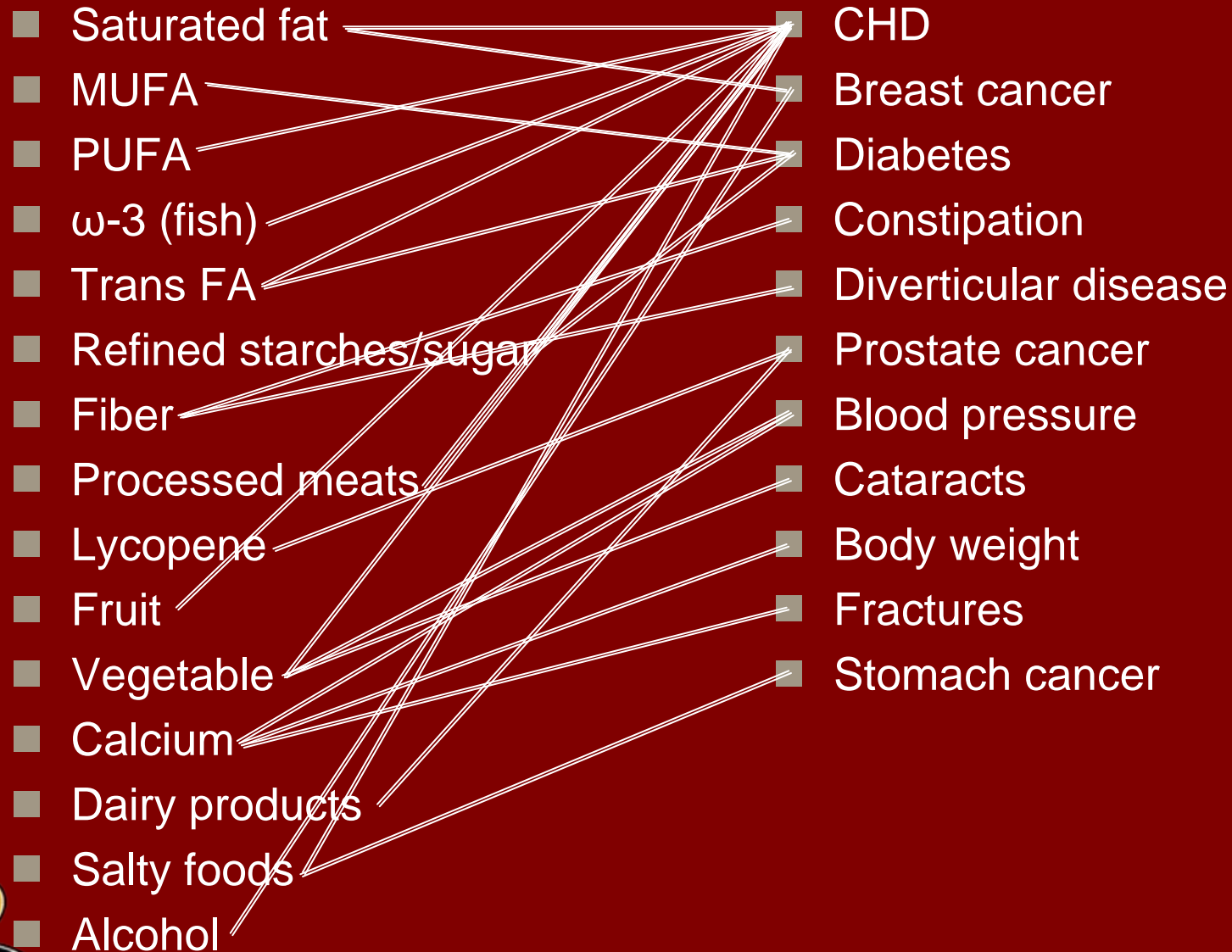
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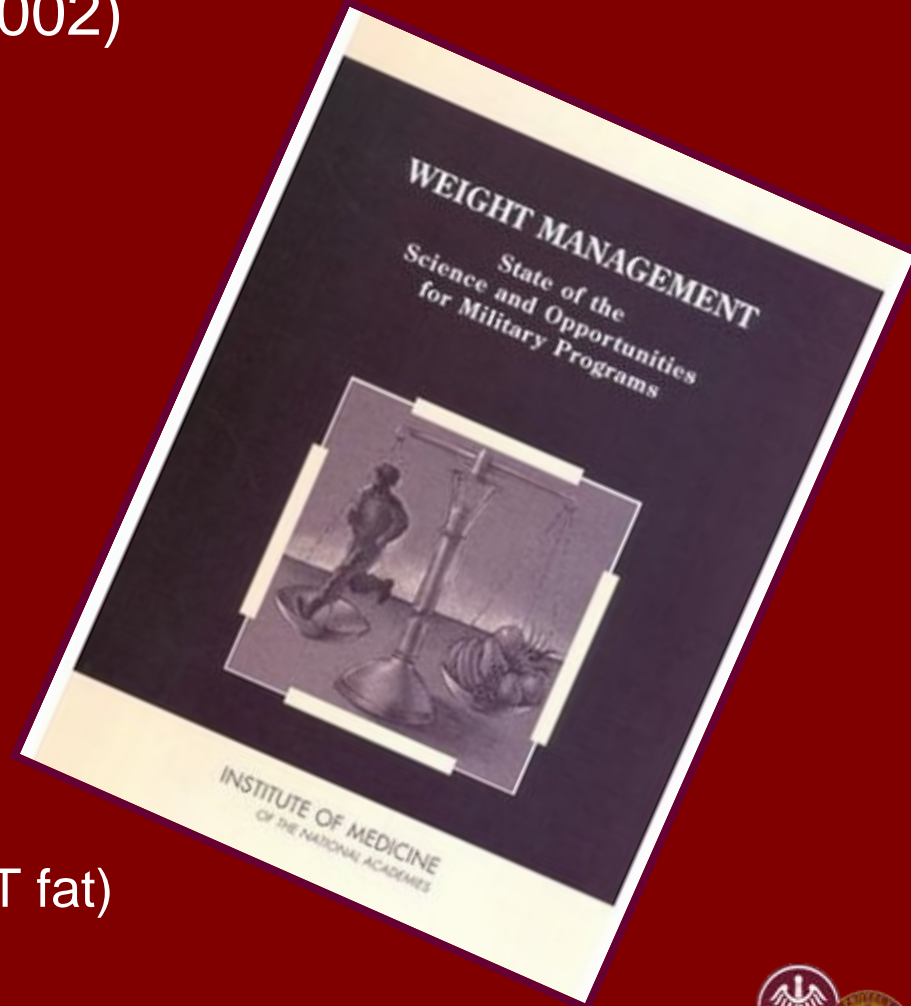
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# ***Diet and health outcome relationships***

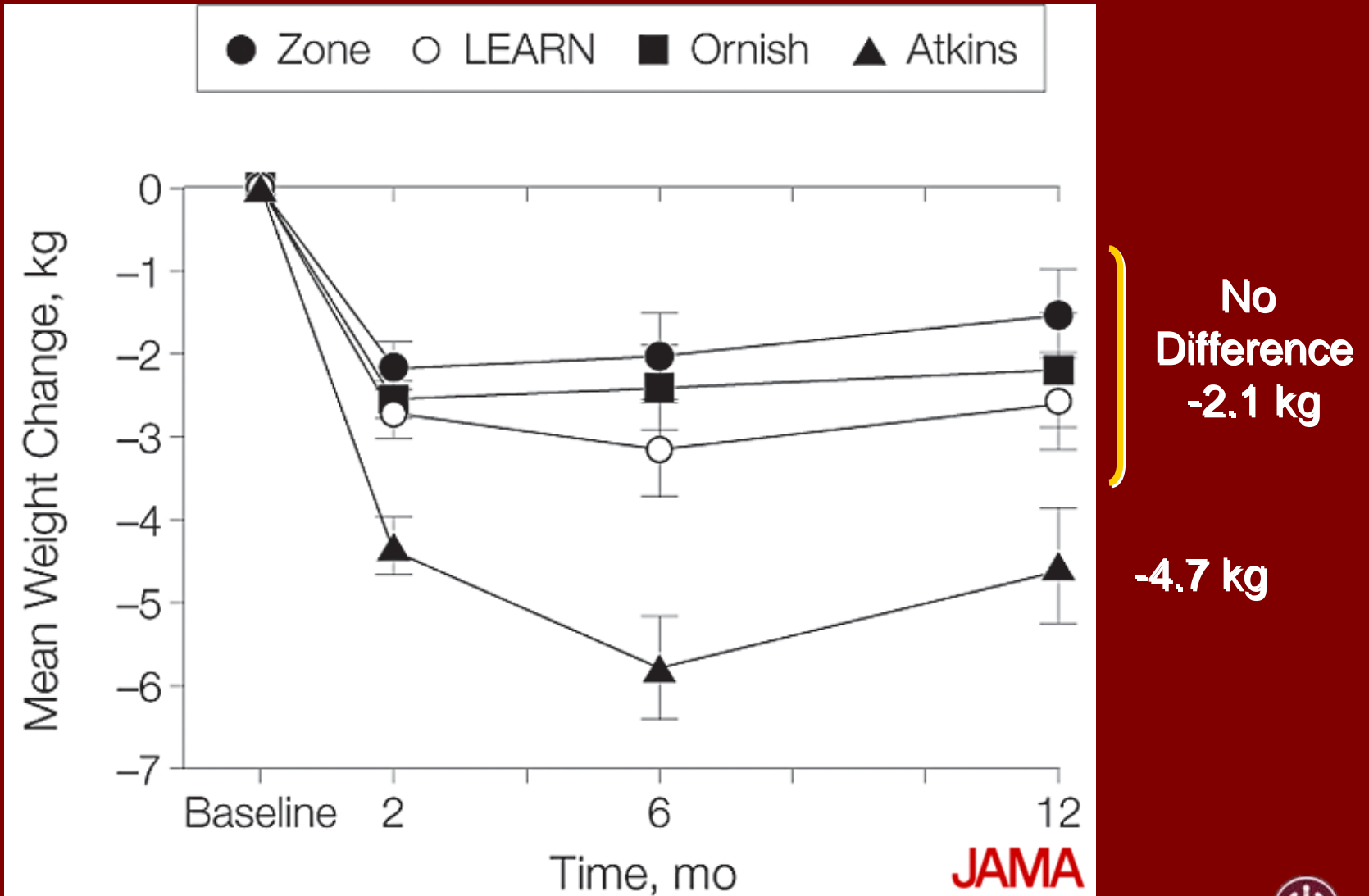


# ***Nutrition and health guidelines***

- AR 40-25, BUMEDINST 10110.6, AFI 44-141, Nutrition Standards and Education (2002)
- Scientific expert panels:
  - US Dietary Guidelines
  - World Health Organization
  - American Heart Association
  - American Cancer Society
  - Country guidelines
- Experts:
  - Atkins (50 g/d CHO)
  - Ornish (10% fat)
  - Zone (40%-30%-30%, C,P,F)
  - LEARN (~60% CHO, 10% SAT fat)



# Weight change relative to baseline (women)

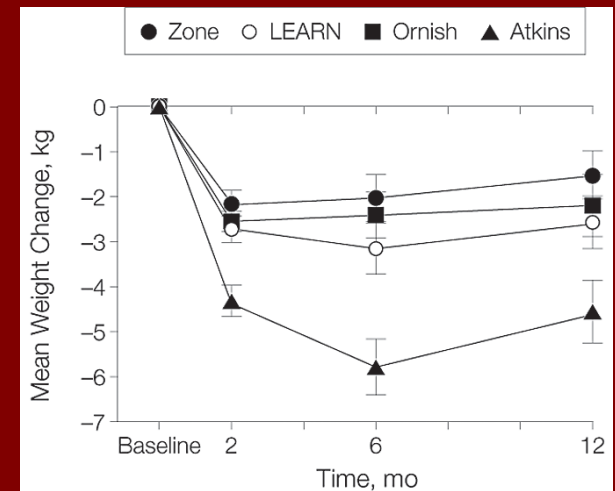


Gardner, C. D. et al. JAMA 2007;297:969-977.



# Weight change relative to baseline (women)

- Secondary outcomes (change at 12 month):
  - % body fat (NS – 3% in Atkins)
  - LDL-cholesterol (NS)
  - HDL-cholesterol [least in Ornish]
  - Triglycerides [least in Zone]
  - Insulin (NS)
  - Glucose (NS)
  - Systolic BP [greatest in Atkins]
  - Diastolic BP [least in Ornish]



Gardner, C. D. et al. JAMA 2007;297:969-977.

**JAMA**



# *Healthy diet*

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- Focus:
  - Prevent nutrient deficiency
  - Optimization of long-term health
- DoD short term:
  - Training
  - Deployment (field feeding)
  - Mission
  - Precise food combinations NOT adequate under ALL conditions
- Long term:
  - Career military personnel (entry to retirement)
  - Major diseases develop over decades





# *Healthy diet (cont)*

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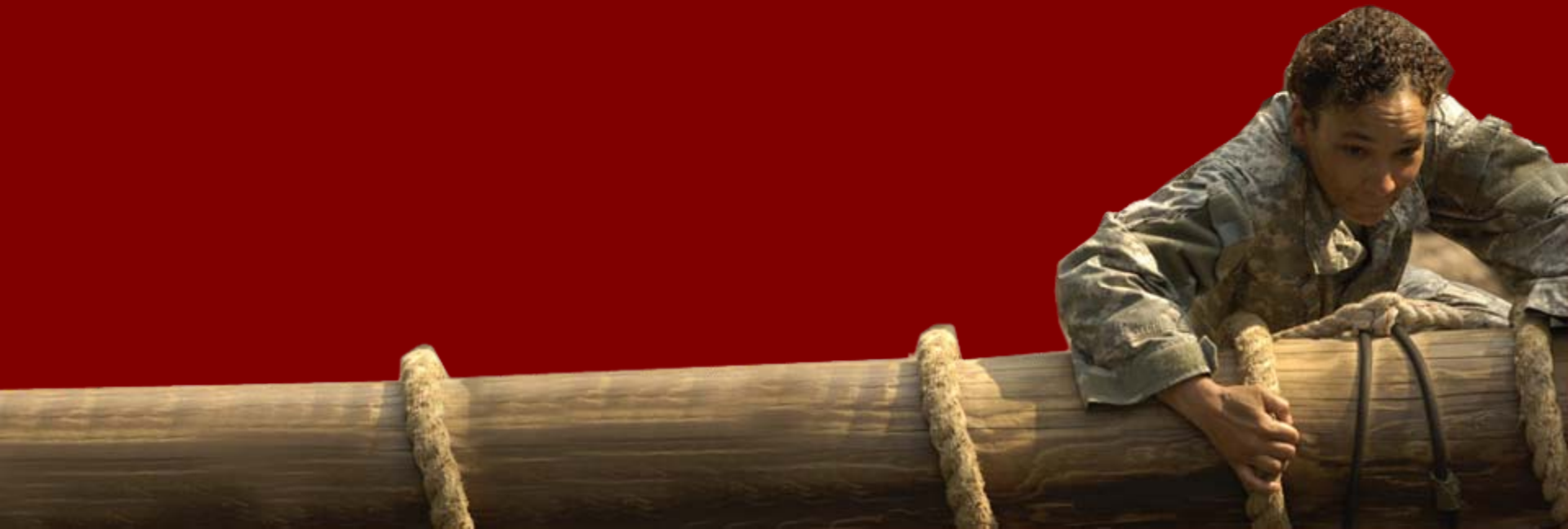
- Promote health with sound advice:
  - Authoritative
  - Evidence (science) based
  - Comprehensible
- Optimal nutrient intake (improved functionality):
  - Muscle strength, immune function, intellectual ability
  - Difficult to substantiate with population-based controlled studies
- Define goal of public health interest (nutrient or food[s]):
  - Overweight / obesity (excess energy and exercise)
  - Fractures (calcium, vitamin D)
  - Anemia (iron)
- Alternative nutritional therapies (supplements):
  - ① Work
  - ② Do not work
  - ③ Efficacy is uncertain



# *Information needed to form guidelines*

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- Current consumption of foods
- Current incidence, prevalence, and trends of diet-related public health problems (TMA)
- Links between diet and nutrients and disease/conditions (leverage with national expert panels – military specific)
- Are dietary interventions feasible?



# *Information to form guidelines (cont)*

- Consider:
  - Cost (economics)
  - Current consumption patterns
  - Food availability
  - Consumer preferences (taste, sustainability of the diet)
  - Purpose (reset, treatment)



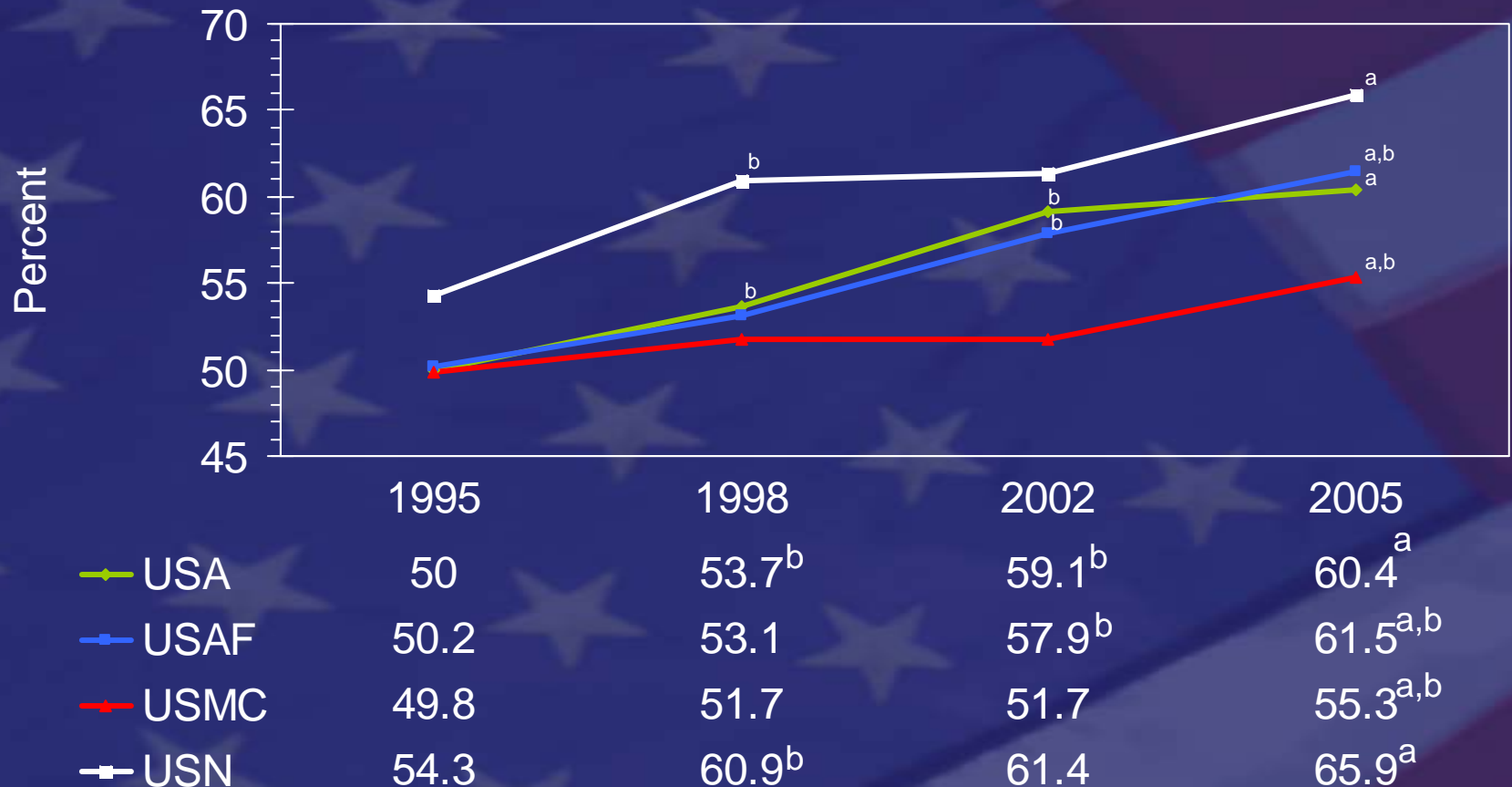
# ***Nutrition monitoring***

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- National Nutrition Monitoring and Related Research Act of 1990, Public Law 101-445:
  - What We Eat In America – NHANES
    - Health and nutritional status of Americans (all ages)
    - Complex, multistaged, stratified probability sampling (oversampling of some groups required)
    - ~ 5000 persons per year
  - Monitor health trends – obesity (risk factors / comorbidities)
  - Military excluded
- ➡ Establish a DoD-NHANES program



# ***Trends in overweight (BMI $\geq$ 25.0) by Service in military personnel ( $\geq$ 20 yo)***

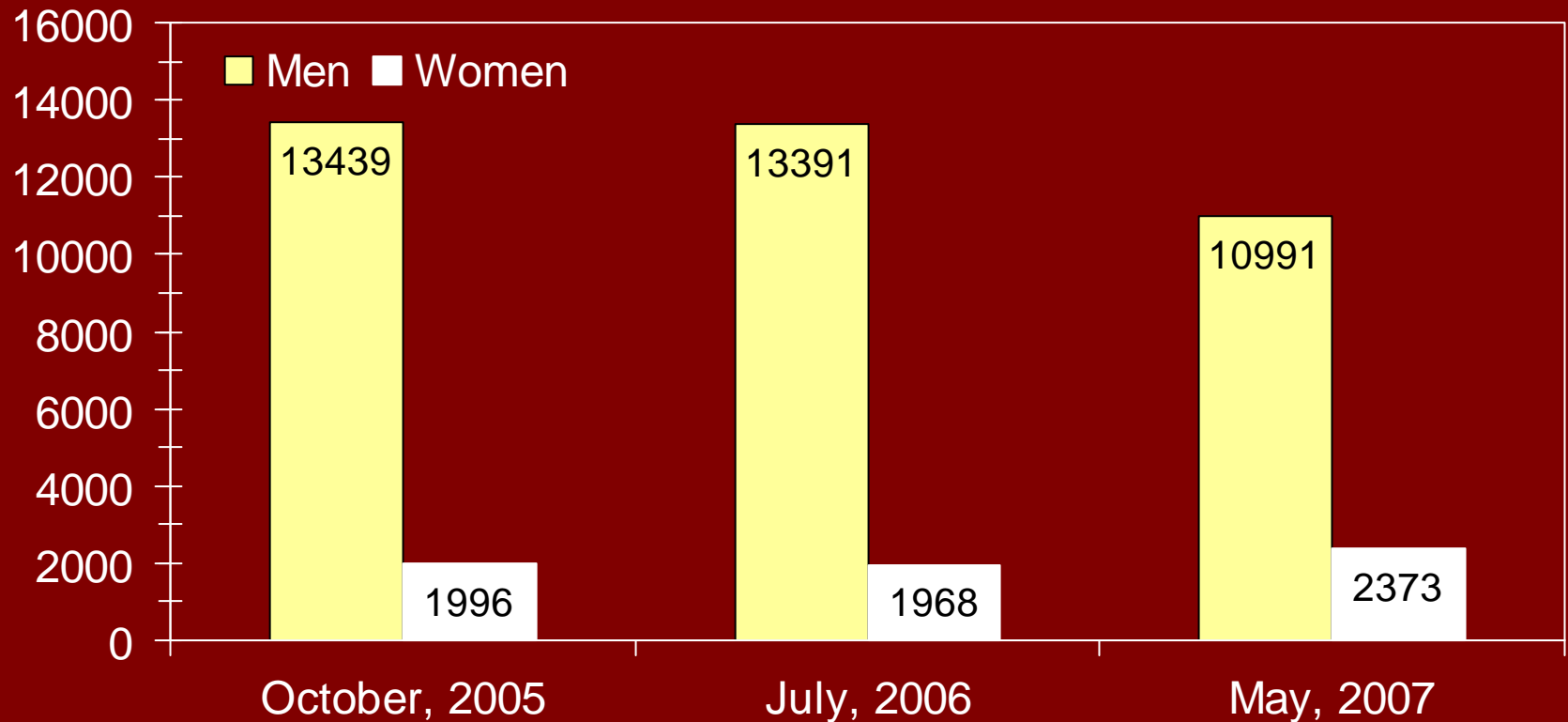


<sup>a</sup>Greater than 1995 prevalence.

<sup>b</sup>Greater than previous year prevalence.

NHANES 2003-2004: 66.2%

# Soldiers\* on the Army Weight Control Program (AWCP)

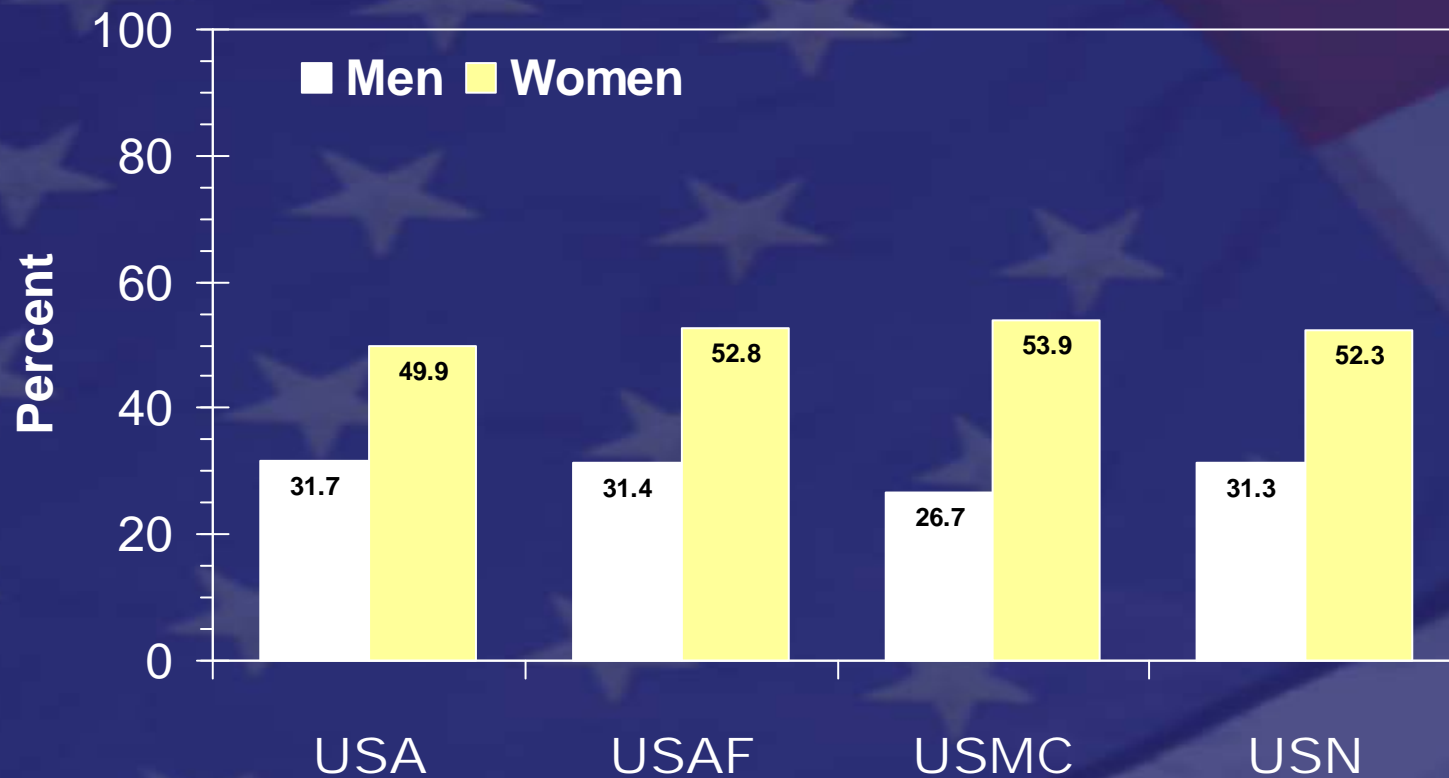


Total	486,262	495,014	502,302
% of Force	3.2%	3.1%	2.7%
% of AWCP	87.1 / 12.9%	87.2 / 12.8%	82.2 / 17.8%

\*Includes USAR/ARNG soldiers on active duty in support of the war.

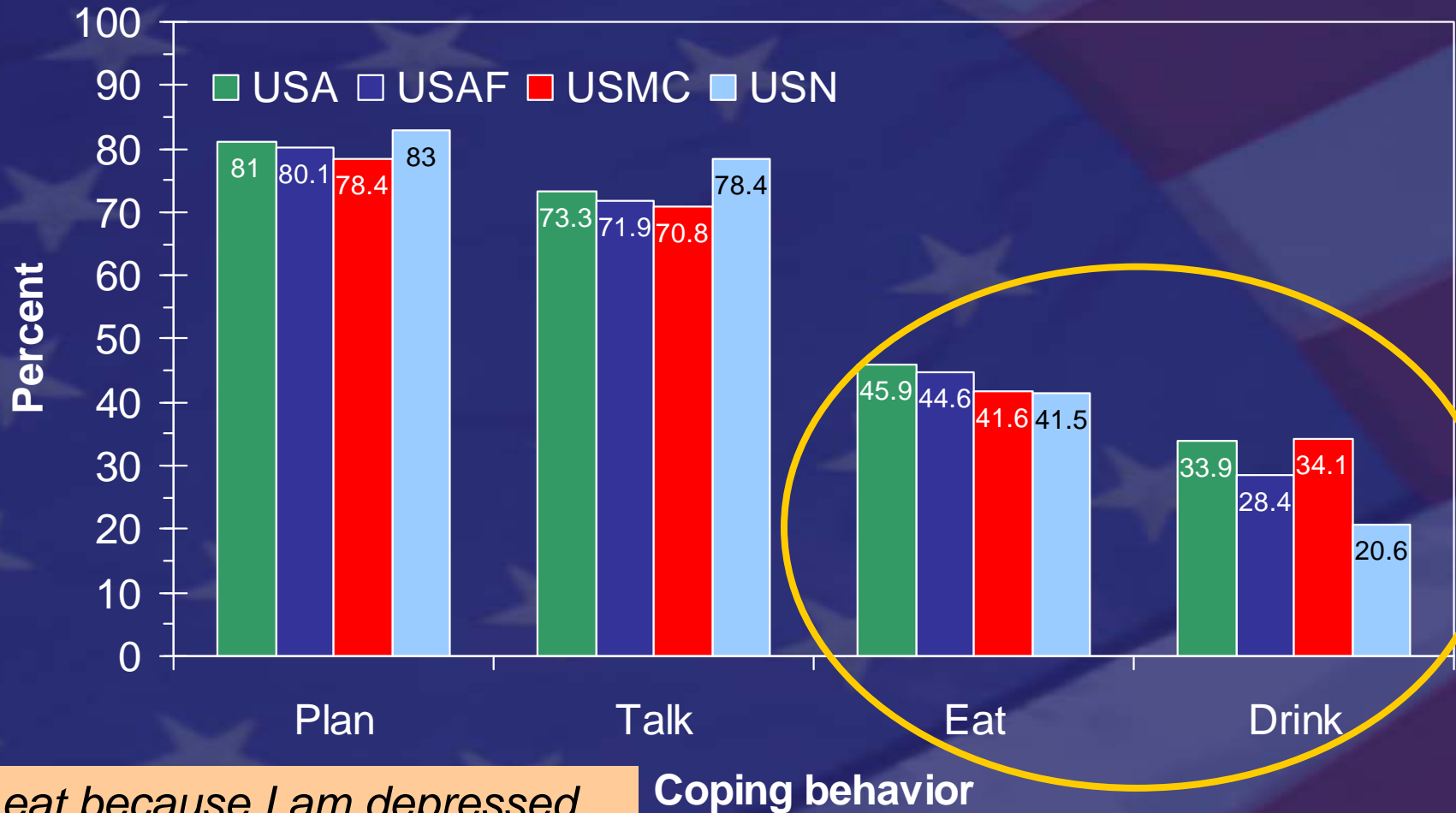


# ***Stress as reason for weight gain***





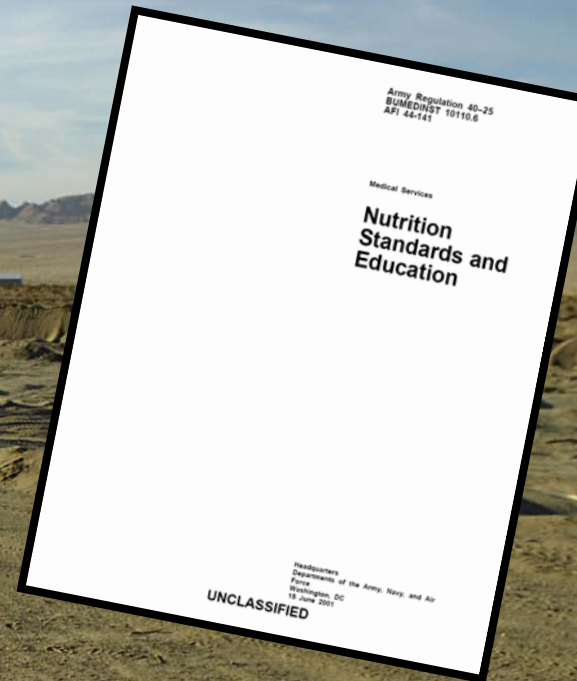
# Behaviors for coping with stress (2005)



*"I eat because I am depressed...  
I'm depressed because I eat."  
Anonymous*



# Current, Relevant & Scientifically Valid



- ✓ Leverage DoD program with U.S. expert panels
- ✓ Institute a DoD-focused food guide pyramid
- ✓ Establish DoD NHANES program
- ✓ Near term success (overweight)



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